What is claimed is:

1.   A computer program product comprising:

a computer usable medium having computer-readable code embodied therein for configuring a computer, the computer program product comprising:

5   (a) computer-readable code configured to cause a computer to periodically receive one or more state parameters of interest;

(b) computer-readable code configured to cause a computer to periodically access a searchable database of stored data describing airport features of interest and to retrieve therefrom one or more of the stored data;

10   (c) computer-readable code configured to cause a computer to construct a zone of awareness relative to one or more of the retrieved airport features of interest;

(d) computer-readable code configured to cause a computer to periodically compare the state parameters with one or more of the zones of awareness;

(e) computer-readable code configured to cause a computer to periodically detect one

15   or more alert conditions as a function of comparing the state parameters with one or more of the zones of awareness;

(f) computer-readable code configured to cause a computer to generate an alert as a function of at least one of the detected alert conditions; and

(g) computer-readable code configured to cause a computer to output an annunciation

20   representative of the alert.

2.   The computer program product of claim 1 wherein the computer-readable code configured to cause a computer to periodically access a searchable database of stored data describing airport features of interest and to retrieve therefrom one or more of the stored data further comprises computer-readable code configured to cause a computer to access the

25   searchable database as a function of the state parameters.

3.   The computer program product of claim 1 wherein the computer-readable code configured to cause a computer to periodically receive one or more state parameters of interest further comprises computer-readable code configured to cause a computer to periodically sample a source of sensor data.

4.   The computer program product of claim 3 wherein the computer-readable code configured to cause a computer to periodically sample the sensor data and to periodically receive one or more state parameters of interest further comprises computer-readable code configured to cause a computer to generate from the sampled sensor data one or more state

5   parameters of interest including one or more of ground speed, heading and position.

5.   The computer program product of claim 4 wherein the computer-readable code configured to cause a computer to generate one or more state parameters of interest further comprises one or more of: computer-readable code configured to cause a computer to extract the state parameters of interest from the sampled sensor data, and computer-readable code

10   configured to cause a computer to derive the state parameters of interest from the sampled sensor data.

6.   The computer program product of claim 1 wherein the computer-readable code configured to cause a computer to output an annunciation representative of the alert further comprises computer-readable code configured to cause a computer to output the

15   annunciation representative of the alert as a function of a potential of the detected alert conditions for causing one or more of a runway incursion, a taxiway transgression, and an other unsafe state.

7.   The computer program product of claim 1, further comprising a processor having the computer program product installed thereon.

20   8.   The computer program product of claim 7, further comprising a searchable database of stored data describing one or more airport features of interest.

9.   The computer program product of claim 1, further comprising computer-readable code configured to cause a computer to periodically access a source of data describing one or more state parameters of interest of one or more mobile airport features of interest and to

25   retrieve therefrom one or more of the state parameters of interest of the mobile feature.

10.   An electronic processing apparatus configured for providing supplemental position information and airport situational awareness alerts and advisories to pedestrians and vehicle operators during surface operations, the apparatus comprising:

    a searchable database having stored data describing one or more fixed airport features

5 of interest;

    a processor electrically that is coupled to one or more sources of one or more state parameters of interest and is further electrically coupled to access the database and to retrieve therefrom one or more of the fixed airport features of interest data, the processor further comprising:

10   (a) means for periodically accessing the searchable database and for retrieving therefrom one or more of the fixed airport features of interest data from the stored data;

    (b) means for constructing a zone of awareness relative to one or more of the retrieved fixed and mobile airport features of interest;

    (c) means for comparing the state parameters with one or more of the zones of

15 awareness;

    (d) means for detecting one or more alert conditions as a function of comparing the state parameters with one or more of the zones of awareness;

    (e) means for generating an alert as a function of a detected alert condition; and

    (f) means for outputting a signal representative of the alert.

20 11.   The apparatus of claim 10, further comprising: a source of communication signal data describing one or more mobile airport features of interest; and

    wherein:

    the processor is further electrically coupled to access the source of communication signal data and to retrieve therefrom one or more of the mobile airport features of interest

25 data which includes one or more of position, ground speed and heading information, the processor further comprising:

    means for periodically accessing the source of communication signal data and for retrieving therefrom one or more of the mobile airport features of interest data; and

    the means for constructing a zone of awareness relative to one or more of the

30 retrieved fixed airport features of interest further comprises means for constructing a zone of awareness relative to one or more of the retrieved mobile airport features of interest.

12. The apparatus of claim 10 wherein the means for periodically accessing the searchable database and for retrieving therefrom one or more of the airport features of interest from the stored data further comprises accessing the searchable database as a function of the state parameters of interest.

5   13. The apparatus of claim 10 wherein the processor further comprises means for periodically sampling the one or more sources of the one or more state parameters of interest.

14. The apparatus of claim 13 wherein the means for periodically sampling the one or more sources of the one or more state parameters of interest further comprises means for 10   sampling a source of sensor data.

15. The apparatus of claim 14 wherein the processor further comprises means for generating as a function of the sampled sensor data the one or more state parameters of interest, including one or more of ground speed, heading and position.

16. The computer program product of claim 15 wherein the means for generating the one 15   or more state parameters of interest further comprises one or more of: means for extracting the state parameters of interest from the sampled sensor data, and means for deriving the state parameters of interest from the sampled sensor data.

17. The apparatus of claim 10 wherein the means for outputting a signal representative of the alert further comprises means for outputting a signal representative of the alert having a 20   highest priority according to a means for prioritizing as a function of determining a potential of each of one or more detected alert conditions for causing one or more of a runway incursion, a taxiway transgression, or an other unsafe state.

18. An apparatus for providing supplemental position information and airport situational awareness alerts, the apparatus comprising:
25   a processor coupled for receiving input from a source of own sensor data and further coupled for receiving input from a database of fixed airport features of interest, the processor

being configured for executing a plurality of machine instructions, the plurality of machine instructions comprising:

(i) instructions for causing the processor to receive one or more own sensor data from the source of own sensor data;

(ii) instructions for causing the processor to extract one or more own state parameters of interest from the received own sensor data;

(iii) instructions for causing the processor to access the database of fixed airport features to retrieve one or more of the airport features of interest;

(iv) instructions for causing the processor to determine one or more alert conditions as a function of one or more of the own state parameters of interest and one or more of the retrieved fixed airport features of interest; and

(v) instructions for causing the processor to output one or more signals representative of one or more of the alert conditions.

19.   The apparatus of claim 18, further comprising instructions for causing the processor to prioritize the one or more alert conditions.

20.   The apparatus of claim 19 wherein the instructions for causing the processor to prioritize the one or more alert conditions further comprise instructions for causing the processor to prioritize the one or more alert conditions as a function of potential for causing one or more of a runway incursion, a taxiway transgression, or an other unsafe state.

21.   The apparatus of claim 18 wherein the instructions for causing the processor to access the database of airport features to retrieve one or more of the airport features of interest further comprise instructions for causing the processor to access the database of airport features to retrieve one or more of the airport features of interest as a function of the own state parameters of interest.

22.   The apparatus of claim 18 wherein the instructions for causing the processor to determine one or more alert conditions as a function of one or more of the own state parameters of interest and one or more of the retrieved airport features of interest further comprise instructions for causing the processor to construct a zone of awareness relative to

one or more of the retrieved airport features of interest, and further to compare one or more of the own state parameters of interest with each zone of awareness to determine the one or more alert conditions.

23.   The apparatus of claim 22 wherein:

5   the instructions for causing the processor to access the database of airport features to retrieve one or more of the airport features of interest further comprise instructions for causing the processor to retrieve one or more taxiway and runway features from the database of airport features; and

          the instructions for causing the processor to construct a zone of awareness relative to

10 one or more of the retrieved airport features of interest is limited to instructions for causing the processor to construct a zone of awareness relative to one or more of the taxiways and runways.

24.   The apparatus of claim 23 wherein the instructions for causing the processor to determine one or more alert conditions as a function of one or more of the own state

15 parameters of interest and one or more of the retrieved airport features of interest further comprise instructions for causing the processor to determine one or more alert conditions as a function of one or more of an approaching taxiway condition, an on taxiway condition, an excessive ground speed condition, an approaching runway condition, an on runway condition, a runway distance remaining condition, and an approaching end of runway

20 condition.

25.   The apparatus of claim 18, further comprising a source of one or more mobile airport feature state parameters of interest of one or more mobile airport features of interest, the processor being further coupled for receiving the one or more mobile airport feature state parameters of interest of one or more mobile airport features; and

25   the plurality of machine instructions further comprising instructions for causing the processor to receive one or more of the mobile airport feature state parameters of interest, and

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instructions for causing the processor to determine one or more alert conditions as a function of one or more of the own state parameters of interest and one or more of the received mobile airport feature state parameters of interest.